ment or moment, which movement continues until such particle meets an obstacle and the energy is again reconverted to heat, light and to those forms of obscure radiation, more or less penetrating to ordinary matter.

It is doubtful whether radio-active substances like radium are the fluorescent detectors of such rays as reach us from space, and which are not absorbed by our atmosphere. The simpler hypothesis is that of atomic instability. But the hypotheses which have been outlined above—and they are, of course, only scientific speculations or hypotheses as yet—naturally suggest lines of investigation which are desirable to be carried out. In that way only can any truth, if it exists in these ideas, be determined; or the ideas disproved, as the case may be.

Elihu Thomson.

A POSSIBLE USE FOR RADIUM.

On the authority of M. Curie radium is worth about one million dollars a pound. This estimate is based on the cost of isolating this rarest, newest and most wonderful of the metals, rather than upon its uses to practical people.

Utilitarians may demand: 'Of what use is radium?' Sir Oliver Lodge has said this is difficult to answer for people who wish to make money out of it, but although at present radium grinds no axes, it is held in great estimation by physicists who see in its amazing energy possible solutions for old problems and materials for new ones. A British writer in the *Daily Graphic* of July 13 points out one direction in which a study of the properties of radium may prove of the greatest benefit to mankind, and that is the analogy between its rays and those of luminous insects. As Sir Oliver Lodge remarks, if we could discover the secret of the fire-fly's power to convert some unknown source of energy into light, we could produce light without heat.

Hope is expressed that the study of radium may lead us to a method of obtaining light in a cheaper and more convenient manner than any now known.

X.

SHORTER ARTICLES.

THE FISHES OF THE AFRICAN FAMILY KNERIIDÆ.

In 1866 Dr. Steindachner introduced into the ichthyological system a peculiar western African fresh-water fish which he called *Kneria angolensis* and referred to the family Acanthopsidæ or Cobitidæ. Two years later (1868) Dr. Günther added another species from central Africa (*Kneria spekii*) and ranked the genus as the representative of a peculiar family—Kneriidæ. He placed it as an 'Appendix to the Cyprinidæ,' and there it has ever since been allowed to remain, but I have always felt convinced that it was not at all related to the Cyprinids or Plectognaths even. Very recently data have been acquired which may help us to a solution of the taxonomic problem.

In 1901 Dr. Boulenger made known a remarkable pigmy fish (30 mm. long) from the upper Nile (Fashoda) which he named *Cromeria nilotica* and referred to the family Galaxiidæ, thinking that it 'appears to be most nearly related to *Galaxias*.'

It is very unlikely that the tropical fish should be a member of a family all of whose certain representatives are characteristic of the cool and cold waters of the southern hemisphere and I was inclined to believe that it was really related to the Kneriidæ. An important paper just published by Dr. Swinnerton appears to confirm this view.

In the *Zoologischer Jahrbücher* (Anatomie) published in June, 1903 (pp. 58–70), Dr. Swinnerton has given an article on 'The Osteology of *Cromeria nilotica* and *Galaxias attenuatus*' and made known some extremely interesting results. It appears that there is no relationship between *Cromeria* and the *Galaxiids*, and that *Cromeria* belongs to a peculiar family remarkably distinct from any other known unless it be that of the kneriids. To that, indeed, it seems to belong. It has the same general form, the same arrangement of the fins, the projecting snout or upper jaw, the toothless trenchant jaws, the absence of pharyngeal teeth, the three branchiostegal rays, the very narrow branchial apertures, and the simple air-bladder. Indeed, in all essential